

## Sample Relational Database

**Student:** Alexander Rudolf Gruber

**MNr:** 9812938

### Table of Contents

<b>1</b>	<b>Database Schema: .....</b>	<b>2</b>
<b>2</b>	<b>Practical implementation of the database with mySQL .....</b>	<b>3</b>
<b>3</b>	<b>Inserting Test Data with PHP and HTML: .....</b>	<b>4</b>
<b>4</b>	<b>Database Queries (PHP):.....</b>	<b>6</b>
<b>5</b>	<b>XML Transformation with XSLT:.....</b>	<b>9</b>

## 1 Database Schema:

- Domains:

<b>cid Integer;</b>	<b>customer id</b>
<b>cname String;</b>	<b>customer name</b>
<b>cphone Integer;</b>	<b>customer phone number</b>
<b>ccity String;</b>	<b>customer city</b>
<b>pid Integer;</b>	<b>product id</b>
<b>pname String;</b>	<b>product name</b>
<b>pprice Integer;</b>	<b>product price</b>
<b>tdate Date;</b>	<b>transaction date</b>
<b>tqnt Integer;</b>	<b>transaction quantity</b>
- Relation: customer ( cid, cname, ccity, cphone )
- Relation: product ( pid, pname, pprice )
- Relation: transaction ( cid, pid, tdate, tqnt )

## 2 Practical implementation of the database with mySQL

SHOW DATABASES;

USE EXAMPLE

### #Practical Definition of a database schema:

CREATE TABLE customer (cid Integer NOT NULL,

cname Varchar(30),

ccity Varchar(30),

cphone Integer,

PRIMARY KEY(cid));

CREATE TABLE product (pid Integer NOT NULL,

pname Varchar(20) ,

pprice Integer,

PRIMARY KEY(pid));

CREATE TABLE transaction (cid Integer NOT NULL,

pid Integer NOT NULL,

tdate Date NOT NULL,

tqnt Integer,

PRIMARY KEY(cid, pid, tdate));

SHOW TABLES;

### 3 Inserting Test Data with PHP and HTML:

#PHP script for inserting customers

<?

/\* this script will handle the variables passed from the insert\_customer.html file \*/

/\* declare some relevant variables \*/

PRINT "<html>";

PRINT "<head><title>Insert New Customer</title></head>";

PRINT "<body>";

\$dbname = "example";

\$cname = \$\_POST["cname"];

\$ccity = \$\_POST["ccity"];

\$cphone = \$\_POST["cphone"];

/\* MySQL table created to store the data \*/

\$tablename = "customer";

/\* make connection to database \*/

MYSQL\_CONNECT() OR DIE("Unable to connect to database server");

@mysql\_select\_db("\$dbname") or die("Unable to select database");

\$today = date("Y-m-d");

PRINT "Today is: \$today.<br>";

PRINT "<hr>";

PRINT "You issued the following INSERT query:<br>";

PRINT "<ul>";

PRINT "<li>Customer name: <em>\$cname</em>";

PRINT "<li>Customer city: <em>\$ccity</em>";

PRINT "<li>Customer phone number: <em>\$cphone</em>";

PRINT "</ul>";

PRINT "<hr>";

## VO 506055: Constructional Example

```
/* Insert information into table */
$query = "INSERT INTO $tablename VALUES('$sname','$ccity', '$scphone', 'null')";
$result = MYSQL_QUERY($query);

PRINT "Database server response:<br>";
if($result != 0){
    $affected_rows = mysql_affected_rows();
    PRINT "<strong>Query OK. Rows affected $affected_rows</strong>";
}else{
    PRINT "<strong>Query FAILED. Probably you don't have the proper access rights!</strong>";
}
PRINT "<hr>";
PRINT "<a href = \"insert_customer.html\">Back</a>";
PRINT "</body>";
PRINT "</html>";

/* Close the database connection */
MYSQL_CLOSE();

?>
```

## 4 Database Queries (PHP):

<?

```
/* this script will handle the variables passed from the insert_customer.html file */
```

```
/* declare some relevant variables */
```

```
$dbname = "example";
```

```
/* make connection to database */
```

```
MYSQL_CONNECT() OR DIE("Unable to connect to database server");
```

```
@mysql_select_db("$dbname") or die("Unable to select database");
```

```
/* Select the data from the database */
```

```
$query = "select customer.cname, product.pname, transaction.tdate, transaction.tqnt from  
customer, product, transaction where customer.cid = transaction.cid and product.pid =  
transaction.pid";
```

```
$result = MYSQL_QUERY($query);
```

```
/* How many rows in the result? */
```

```
$number = MYSQL_NUMROWS($result);
```

```
/* Print these results into an XML file*/
```

```
$i = 0;
```

```
$content = "<";
```

```
$content .= "?xml version=\"1.0\" encoding=\"UTF-8\"?";
```

```
$content .= ">\n";
```

```
$content .= "<!-- all transactions -->\n";
```

```
$content .= "<transactions>\n";
```

```
if ($number > 0){
```

```
    while ($i < $number){
```

```
        $cname = mysql_result($result, $i, "cname");
```

## VO 506055: Constructional Example

```
$pname = mysql_result($result, $i, "pname");
$date = mysql_result($result, $i, "tdate");
$tqnt = mysql_result($result, $i, "tqnt");
$content .= "<!-- transaction -->\n";
$content .= "<transaction tdate = \"\$date\" tqnt = \"\$tqnt\">\n";
$content .= "<customer>$pname</customer>\n";
$content .= "<product>$pname</product>\n";
$content .= "</transaction>\n";
$i++;
}
}

$content .= "</transactions>\n";

$file = fopen("tmp.xml", "w");
fwrite ($file, $content);
fclose($file);

/* Close the database connection */
MYSQL_CLOSE();

/* Create an XSLT processor */
$xmlHandle = xslt_create();

/* Perform the transformation */
$html = xslt_process($xmlHandle, 'htdocs/php/example/tmp.xml',
'htdocs/php/example/transactions.xml');

/* Detect errors */
if (!$html) die('XSLT processing error: ' . xslt_error($xmlHandle));

/* Destroy the XSLT processor */
xslt_free($xmlHandle);

/* Output the resulting HTML */
```

## VO 506055: Constructional Example

echo \$html;

?>



## 5 XML Transformation with XSLT:

# Exporting all transactions from the database as an XML file

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- all transactions -->
<transactions>
  <!-- transaction -->
  <transaction tdate = "2002-11-20" tqnt = "3">
    <customer>Nick</customer>
    <product>CPU</product>
  </transaction>
  <!-- transaction -->
  <transaction tdate = "2002-11-09" tqnt = "3">
    <customer>Nick</customer>
    <product>Graphic Card</product>
  </transaction>
  <!-- transaction -->
  <transaction tdate = "2002-11-20" tqnt = "1">
    <customer>Nick</customer>
    <product>Graphic Card</product>
  </transaction>
  <!-- transaction -->
  <transaction tdate = "2002-11-20" tqnt = "1">
    <customer>Denis</customer>
    <product>Display</product>
  </transaction>
  <!-- transaction -->
  <transaction tdate = "2002-11-14" tqnt = "2">
    <customer>Hermann</customer>
    <product>CPU</product>
  </transaction>
</transactions>
```

## VO 506055: Constructional Example

# Applying the XSLT to transform XML into HTML

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
xmlns:fo="http://www.w3.org/1999/XSL/Format">
```

```
<xsl:template match="/">
```

```
  <html>
```

```
    <body>
```

```
      <table border = "1">
```

```
        <tr>
```

```
          <td><strong>Customer</strong></td>
```

```
          <td><strong>Product</strong></td>
```

```
          <td><strong>Date</strong></td>
```

```
          <td><strong>Quantity</strong></td>
```

```
        </tr>
```

```
        <xsl:apply-templates/>
```

```
      </table>
```

```
    </body>
```

```
  </html>
```

```
</xsl:template>
```

```
<xsl:template match="transactions">
```

```
  <xsl:apply-templates/>
```

```
</xsl:template>
```

```
<xsl:template match="transaction">
```

```
  <tr>
```

```
    <xsl:apply-templates/>
```

```
    <td><xsl:value-of select="@tdate"/></td>
```

```
    <td><xsl:value-of select="@tqnt"/></td>
```

```
  </tr>
```

```
</xsl:template>
```

```
<xsl:template match="customer">
```

```
  <td>
```

## VO 506055: Constructional Example

```
<xsl:value-of select="."/></td>
</xsl:template>

<xsl:template match="product">
  <td>
    <xsl:value-of select="."/>
  </td>
</xsl:template>

</xsl:stylesheet>
```